

General

Predict, Observe, Explain

— teabag on fire

(Slovakia)

Background

Predict – Observe -Explain is a teaching strategy that probes understanding by requiring students to carry out three tasks.

Students are required to predict the outcome of an event or experiment in teams by choosing one answer from multiple choices.

The experiment is then performed and observations are made.

Students compare their predictions with the result of the experiment.

What is needed?

- ✓ Teabag
- ✓ Scissors
- ✓ Lighter/matches



Question:

What happens if we set an empty tea bag on fire?

Predict:

1. The tea bag burns with a green flame.
2. The tea bag does not start burning.
3. The tea bag rises into the air and starts flying.

Observe:

1. Unfold the tea bag and empty out the tea leaves.
2. Turn the tea bag into a cylinder.
3. Place the cylindrical tea bag upright on a non-flammable surface
4. Light the top of the tea bag on fire. Observe what happen.

Explain:

When you set fire to the tea bag, the heat from the fire causes the air molecules inside the tea bag to move more quickly and spread out to take up more space. As the air molecules spread out, the air inside the cylinder becomes less dense. Less dense air rises above cool, dense air.

So what happened?

When predictions and observations are inconsistent with each other, students are asked to explain the reason, which then leads to further exploration.

What next?

- Try using the Predict-Observe-Explain strategy for this question:
- What equipment do we need if we want to lift an iron nail up without touching it?
 - a) a fork, a key, and a 4.5V battery
 - b) one more iron nail and a 4.5V battery
 - c) an iron bar, a wire, and a 4.5V battery

The Evidence based Practice in Science Education (EPSE) Research Network has developed some multiple choice questions for electricity, force and motion, matter and change, and the particle model of matter. Available here

<https://www.scoilnet.ie/go-to-post-primary/collections/junior-cycle/diagnostic/>